

PRODISCOTHYREA, A NEW GENUS OF PONERINE ANTS
FROM QUEENSLAND.¹

By WILLIAM MORTON WHEELER.

(Communicated by Arthur M. Lea.)

[Read April 13, 1916.]

PLATE IV.

PRODISCOTHYREA, gen. nov.

Worker. Small, monomorphic, closely related to *Discothyrea*, Roger. Mandibles triangular, with straight, toothless apical border, furnished with a row of short, dense, regular setae. Both the maxillary and labial palpi 4-jointed. Head produced and narrowed in front to the very short, transverse clypeus which projects out over the mandibles like a roof. Frontal carinae large, lyriform, horizontally flattened, apparently fused in front with the middle of the clypeus, where they are closely approximated. Frontal area and groove obsolete. Head deeply and broadly excavated at the sides of the frontal carinae, forming large, laterally indistinct scrobes for the accommodation of the antennal scapes. Ocelli absent, eyes small, but convex, well in front of the middle of the head. Antennae very large and robust, 10-jointed; scape incrassated, inserted at the anterior border of the head very near the clypeal margin, concave on the flexor surface for the accommodation of the funiculus; the latter with greatly enlarged apical and very transverse basal joints. Thorax short, convex and rounded above, without promesonotal and mesoëpinotal sutures, epinotum merely tuberculate, inferior corners of pronotum blunt. Petiole small, rounded above, and attached by nearly its whole posterior surface to the postpetiole, unarmed beneath. Postpetiole very large, forming the great bulk of the abdomen; gastric segments small, the first very convex above, turned downward and forward, remaining segments small, forming an anteriorly directed cone, as in *Discothyrea*, *Proceratium*, *Sysphincta*, and *Spaniopone*. Sting well developed. Legs with slender

(1) "Contribution from the Entomological Laboratory of the Bussey Institution, Harvard University, No. 102.

tarsi and simple claws; middle tibiae without spurs, hind tibiae with a single large feebly-pectinated spur. Body opaque, sculptured; hairs absent; pubescence short, dense, and silky.

Female (deälated). Very similar to the worker and but slightly larger. Ocelli present, but small; eyes somewhat larger than in the worker. Thorax with distinct pronotal, mesonotal, scutellar, metanotal, and tegular sclerites, and with stumps of the lost wings.

PRODISCOTHYREA VELUTINA, sp. nov.

Worker. Length, about 2 mm.

Head subrectangular, a little longer than broad, decidedly narrower in front than behind, very convex above, with straight posterior and rather convex lateral borders and rounded posterior corners. Gular surface rather convex, with a prominent, ridge-shaped tubercle on each side. Clypeus transversely and regularly convex, its anterior border straight and distinctly crenulate, especially in the middle. Frontal carinae extending back about two-thirds the length of the head, dilated and horizontally flattened in the middle, the space between them scarcely concave, rounded antero-posteriorly and continuous with the regular convex surface of the head. Antennal scapes nearly two-thirds as long as the head; scapes incrassated, especially at the apex, where they are nearly one-fourth as broad as their length; first funicular joint rather broad, subglobular, distinctly broader than long; joints 2-5 subequal, very transverse; 6-8 larger and proportionately longer, terminal joint very large, glandiform, as long as the remainder of the funiculus, about two and one-half times as long as broad. Thorax narrower than the head, seen from above trapezoidal, about one and two-fifths as long as broad, and one and one-half times as broad through the humeri as through the épinotum, sides slightly concave; humeri bluntly angular; in profile the thoracic dorsum is very unevenly convex to the declivity of the épinotum, which is abrupt, concave, and marginate on the sides. Each margination merges into a scarcely distinguishable tubercle above, and the base and declivity are separated by a transverse ridge. Petiole from above nearly twice as broad as long, broader behind than in front, with straight anterior and lateral and feebly convex posterior borders; in profile the segment is less than twice as long as high, convex and anteriorly sloping above and on the sides, its ventral surface compressed and translucent anteriorly, but without a spine

or tooth. Postpetiole convex above, one and one-quarter times as long as broad, much broader behind than in front, where it is as broad as the posterior border of the petiole, the ventral surface anteriorly with a blunt, transverse tubercle. First gastric segment separated by a slight constriction from the postpetiole, as broad as long, very convex dorsally, and rapidly narrowed behind to the small remaining segments. Legs moderately long, tarsi slender. Opaque; gaster and legs somewhat shining. Mandibles densely and finely punctate-rugulose. Head, thorax, petiole, and postpetiole uniformly and densely foveolate (thimble-pitted), gaster and legs very finely and densely punctate and shagreened; antennal scapes with smaller and more scattered foveolae than the head. Hairs lacking; whole body covered with short, fine, dense, silky, yellowish-white pubescence, so that the surface appears like velvet under a low magnification. Rich ferruginous-red; gaster and legs, including the coxae, slightly paler and more yellowish; edges of frontal carinae, posterior border and a median dorsal line on the postpetiole, and a similar line on the first gastric segment deep brownish-red.

Female (deälated). Length, about 2.4 mm.

Differing from the worker in the larger eyes, the presence of ocelli, and the structure of the thorax. Pronotum twice as broad as long and very short in the middle, owing to the extension forward of the mesonotum, which is as long as broad, evenly convex above, with distinct parapsidal furrows. Tubercles of the epinotum distinctly larger and more acute than in the worker.

Described from 39 specimens, one female and 38 workers, constituting an entire colony taken by myself October 24, 1914, in a small clearing in the tropical "scrub" (rain forest) at Kuranda, Northern Queensland. The nest was of peculiar structure, being a small, regularly-elliptical cavity, 2 cm. long by 1.5 cm. in width, in the soil under the centre of a large flat stone. This cavity was completely lined with the dense, white mycelium of a fungus, on which the ants were quietly resting. When disturbed their movements were very slow, and many of them curled up and "feigned death." I could find no larvae in the cavity, but there were several small, pinkish, spherical bodies, which I took to be parts of the fungus. The nature of the delicate layer of nutrient substratum on which the hyphae were growing could not be ascertained. The colour, sculpture, and velvety texture of the ants and their timid behaviour are strikingly like those of certain species of the neotropical fungus-growing tribe

Attiini (notably species of *Sericomyrmex* and *Aptero-stigma*).⁽²⁾ These peculiarities, and the fact that the colony was completely shut off from the outside world by a layer of mycelium, strongly suggest that *Prodiscothyrea velutina* is a fungus-growing and fungus-eating ant. Should further research prove this supposition to be correct, the insect would be of considerable interest as the first case of a fungus-gardener among the ants of the Old World, and the first to exhibit the habit among the members of the subfamily Ponerinae. As the Ponerinae are by common consent regarded as a very ancient and primitive group, we should have to infer that the habit was probably of great antiquity, and had been acquired independently at least twice during the phylogeny of the Formicidae. The possibility of a third independent development of the habit is, indeed, suggested by the extraordinary Myrmicine ant *Proatta butteli*, recently described by Forel from Sumatra, because it is structurally very similar to certain species of the Attiine genus *Mycocepurus*, but von Buttal-Reepen did not find it associated with fungi, but in the carton nest of a termite (*Hamitermes dentatus*, Harv.), which does not cultivate fungi like many of the Old World termites.

Prodiscothyrea evidently belongs to Emery's tribe Proceratiini, and is very closely related to *Discothyrea*. In this genus, however, the antennae are 9-jointed; the clypeus forms a semicircular disc instead of a very short, transverse plate, the frontal carinae are very much smaller and shorter, there are no large impressions on each side of the head for the accommodation of the antennal scapes, the eyes are smaller and at the middle of the sides of the head, and in the female the eyes and ocelli, judging from the descriptions, are much larger. Like *Discothyrea* and *Spaniopone*, *Prodiscothyrea* is related to *Bradoponera* of the Baltic amber, which is of the lower Oligocene age. The Australian genus is evidently an ancient Mesozoic genus, like *Paranomopone*, which I recently described, from the same locality in Northern Queensland (Psyche, xxii., 1915, pp. 117-120, pl. 1). The great antiquity of the tribe Proceratiini is attested by its wide geographical range and the sporadic occurrence of species of *Proceratium*, *Discothyrea*, and *Sysphincta* in widely separated regions of both hemispheres.

(2) The peculiar structure of the toothless mandibles, with the dense, regular row of short setae along their apical borders, is also suggestive of habits which require the manipulation of such delicate bodies as fungus hyphae, though I know of no similar structures in our American fungus-growing ants.

EXPLANATION OF THE PLATE.

- Fig. 1. Worker of *Prodiscothyrea velutina*, sp. nov., from the side.
 „ 2. Head of same from above.
 „ 3. Head from below.
 „ 4. Head from behind.
 „ 5. Mandible from below.
 „ 6. Extensor surface of antenna.
 „ 7. Dorsal view of thorax, petiole, and postpetiole.
 „ 8. Middle leg.
 „ 9. Hind leg.
-

AMENDING NOTE.

Professor Wheeler writes that it is necessary to make some amendments to his paper dealing with the ants, taken by Captain White, in last year's Transactions; as "I find that the name *Polyrhachis longipes* ⁽³⁾ is preoccupied, and I would substitute for it *Polyrhachis macropus*. The name *Camponotus aurofasciatus* ⁽⁴⁾ was given by mistake to the minor worker of *Camponotus (Myrmotrema) inflatus*, Lubbock, as I find from examination of some of the material you sent me for study. The minor worker of this ant had not been described, and is so different from the major worker of *inflatus* that I did not recognize it as belonging to that species."

(3) *Ante*, 1915, p. 821.

(4) *L.c.*, p. 817.